What is claimed is:

1. A method of network bridging wherein local nodes within a first sub-network communicate to remote nodes within a second sub-network using unique addresses assigned to each node, where

5   bridge devices perform the interface function between the sub-networks, the method comprising the steps of:

assigning a local address to each local node within a sub-network;

10   within each sub-network, assigning an address to each remote node;

whereby within each sub-network local nodes and remote nodes are identified with unique addressess.

15   2. The method of claim 1 wherein the step of assigning an address to each remote node comprises the steps of:

collecting at the bridge device of each sub-network information about remote nodes;

20   appending the collected information about remote nodes to the address assignment of each local node;

mapping remote node addresses to a virtual local address;

25   performing another assignment of addresses to each local node within the sub-network that includes remote node address information; and

communicating between local nodes and remote nodes by translating in the bridge device between virtual local addresses and remote node addresses.

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3. The method of claim 1 wherein the step of assigning an address to each remote node comprises the steps of:

receiving in a bridge device a list, if a list is available, of remote node addresses;

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assigning unique addresses to local nodes that are distinct from all remote node addresses;

transmitting the list of remote node addresses and the unique local node addresses to other bridge devices;

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repeating the steps of receiving, assigning, and transmitting addresses until bridge devices of the sub-networks have performed assigning addresses to local nodes;

communicating between local nodes and remote nodes by passing data through bridge devices.

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4. The method of claim 1 wherein the first sub-network communicates to the second sub-network over a third network connected between the first and second sub-networks wherein the third network is dissimilar to the first and second sub-networks..

20 5. A method of bridging 1394 devices that are not bridge aware from one 1394 bus branch through a backbone bus to another 1394 bus branch, each 1394 bus branch having a bridge device comprising a 1394 portal and a backbone portal, the bridge device having control over 1394 devices in the branch, the method comprising the steps of:

25 assigning a cycle master (CM) to control the backbone bus;

assigning a backbone bus node number to other backbone nodes;

the CM requests all bridge devices to initiate a bus configuration, the bridge devices performing
30 the sequence comprising:

13

resetting each 1394 device;

tree-identification of 1394 devices;

self-identification of 1394 devices controlled by a branch root node, the self-identification comprising a physical-identification;

5   collecting self-identification packets in the branch root node;

transmitting the collection of local self-identification packets to the CM;

forming a database of self-identification packets from all nodes in the network;

10   transmitting the database of self-identification packets to all bridge devices;

translating, in each bridge, the physical-id of each remote node to a virtual local node id that is unique within the branch;

15   adding a phantom node to the list of virtual local node ids; and

initiating, by each bridge, another bus configuration wherein the branch root additionally transmits translated self-id packet corresponding to remote nodes;

20   whereby each local node addresses remote nodes using virtual local node ids.

6. A method of bridging 1394 devices that are not bridge aware from one 1394 bus branch through a backbone bus to another 1394 bus branch, each 1394 bus branch having a bridge device comprising a 1394 portal and a backbone portal, the bridge device having control over

25   1394 devices in the branch, the method comprising the steps of:

(a) assigning a cycle master (CM) to control the backbone bus;

(b) assigning a backbone bus node number to other backbone nodes;

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14

(c) the CM requests a first bridge device to initiate a bus configuration, the bridge device performing the sequence comprising:

      resetting each 1394 device;

5   tree-identification of 1394 devices;

      self-identification of 1394 devices controlled by a branch root node, the self-identification comprising a physical-identification;

      collecting self-identification packets in the branch root node;

      transmitting the collection of local self-identification packets to the CM;

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(d) forming a database of self-identification packets from all nodes in the network;

(e) accumulating and transmitting the database of self-identification packets to a second bridge device;

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(f) the CM requests the second bridge device to initiate a bus configuration wherein the 1394 portal becomes the branch root node; the root node causes the received database of self-identification packets to be transmitted to all local nodes in the branch causing the local nodes to begin self-identification at an address above the highest address in the received database; the

20   local nodes transmit self-identification packets;

(g) accumulating into the database the self-identification of the local nodes and transmitting the accumulated data base to a third bridge device;

25   (h) repeating steps (f) and (g) for all branches connected to the backbone network;

(h) the CM send an accumulated self-identification database to all branch root nodes; each branch root re-transmits self-id packets from branch 0 and branches with higher branch numbers;

30   whereby each local node address is unique and is part of a single logical bus.